

CLAIMS

What is claimed is:

- 5 1. A method for controlling subscriber access in a network capable of establishing connections with a plurality of domains, comprising:
- receiving a communication from a subscriber using a first communication network
- coupled to at least one other communication network, said communication
- optionally including a domain identifier associated with a domain on said at least
- 10 one other communication network;
- determining whether said subscriber is authorized to access said domain based upon said domain identifier and a list of authorized domains for a virtual circuit used to receive said communication;
- authorizing subscriber access to said domain when said domain identifier is included
- 15 in said list.
2. The method of claim 1, further comprising terminating said communication when said domain identifier is not included in said list.
- 20 3. The method of claim 1 wherein said communication comprises a Point-to-Point Protocol (PPP) session.
4. The method of claim 3 wherein
- said PPP session comprises a tunneling session;
- 25 said determining further comprises assigning a tunnel ID; and

said PPP session is forwarded onto a tunnel associated with said tunnel ID when said subscriber is authorized to access said domain.

5 5. The method of claim 4 wherein said tunneling session comprises an L2TP session.

6. The method of claim 5 wherein said determining further comprises:

issuing an authorized domain list request including a virtual circuit identifier;

receiving an authorized domain list that includes authorized domains for said

10 identifier;

indicating said domain is unauthorized when said domain name is not in said domain

list;

indicating said domain is authorized when said domain name is in said domain list;

issuing a tunnel ID request including said domain name when said domain name is

15 authorized; and

receiving a tunnel ID.

7. The method of claim 6 wherein

said authorized domain list request is serviced by an AAA server; and

20 an AAA server services said tunnel ID request.

8. The method of claim 6 wherein said virtual circuit identifier comprises a VPI/VCI identifier.

9. The method of claim 5 wherein said determining further comprises:

issuing a tunnel ID request including said domain name and a virtual circuit

identifier; and

5 receiving a tunnel ID.

10. The method of claim 9 wherein an AAA server services said tunnel ID request.

11. The method of claim 9 wherein said virtual circuit identifier comprises a VPI/VCI

10 identifier.

12. The method of claim 5 wherein said determining further comprises:

performing a table lookup based on a virtual circuit identifier to obtain an authorized

domain list that includes authorized domains for said virtual circuit identifier;

15 indicating said domain is unauthorized when said domain name is not in said

authorized domain list;

indicating said domain is authorized when said domain name is in said authorized

domain list; and

performing a table lookup based on said domain name to obtain a tunnel ID when

20 said domain name is authorized.

13. The method of claim 12 wherein said virtual circuit identifier comprises a VPI/VCI

identifier.

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14. A program storage device readable by a machine, embodying a program of

instructions executable by the machine to perform a method to control subscriber

access in a network capable of establishing connections with a plurality of domains,  
the method comprising:

receiving a communication from a subscriber using a first communication network

5       coupled to at least one other communication network, said communication  
optionally including a domain identifier associated with a domain on said at least  
one other communication network;

determining whether said subscriber is authorized to access said domain based upon  
said domain identifier and a list of authorized domains for a virtual circuit used  
10       to receive said communication;

authorizing subscriber access to said domain when said domain identifier is included  
in said list.

15. The program storage device of claim 14, further comprising terminating said  
15       communication when said domain identifier is not included in said list.

16. The program storage device of claim 14 wherein said communication comprises a  
Point-to-Point Protocol (PPP) session.

20   17. The program storage device of claim 16 wherein  
said PPP session comprises a tunneling session;  
said determining further comprises assigning a tunnel ID; and  
said PPP session is forwarded onto a tunnel associated with said tunnel ID when said  
subscriber is authorized to access said domain.

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18. The program storage device of claim 17 wherein said tunneling session comprises an L2TP session.

5 19. The program storage device of claim 18 wherein said determining further comprises:  
issuing an authorized domain list request including a virtual circuit identifier;  
receiving an authorized domain list that includes authorized domains for said  
identifier;  
10 indicating said domain is unauthorized when said domain name is not in said domain  
list;  
indicating said domain is authorized when said domain name is in said domain list;  
issuing a tunnel ID request including said domain name when said domain name is  
authorized; and  
15 receiving a tunnel ID.

20. The program storage device of claim 19 wherein  
said authorized domain list request is serviced by an AAA server; and  
an AAA server services said tunnel ID request.

20 21. The program storage device of claim 19 wherein said virtual circuit identifier  
comprises a VPI/VCI identifier.

22. The program storage device of claim 18 wherein said determining further comprises:  
issuing a tunnel ID request including said domain name and a virtual circuit  
25 identifier; and  
receiving a tunnel ID.

23. The program storage device of claim 22 wherein an AAA server services said tunnel ID request.

24. The program storage device of claim 22 wherein said virtual circuit identifier comprises a VPI/VCI identifier.

25. The program storage device of claim 18 wherein said determining further comprises:

performing a table lookup based on a virtual circuit identifier to obtain an authorized domain list that includes authorized domains for said virtual circuit identifier; indicating said domain is unauthorized when said domain name is not in said authorized domain list; indicating said domain is authorized when said domain name is in said authorized domain list; and performing a table lookup based on said domain name to obtain a tunnel ID when said domain name is authorized.

26. The program storage device of claim 25 wherein said virtual circuit identifier comprises a VPI/VCI identifier.

27. An apparatus for controlling subscriber access in a network capable of establishing connections with a plurality of domains, the apparatus comprising:  
means for receiving a communication from a subscriber using a first communication network coupled to at least one other communication network, said communication optionally including a domain identifier associated with a domain on said at least one other communication network;

means for determining whether said subscriber is authorized to access said domain  
based upon said domain identifier and a list of authorized domains for a virtual  
circuit used to receive said communication;

5 means for authorizing subscriber access to said domain when said domain identifier is  
included in said list.

28. The apparatus of claim 27, further comprising means for terminating said  
communication when said domain identifier is not included in said list.

10 29. The apparatus of claim 27 wherein said communication comprises a Point-to-Point  
Protocol (PPP) session.

30. The apparatus of claim 29 wherein

15 said PPP session comprises a tunneling session;

said determining further comprises means for assigning a tunnel ID; and

said PPP session is forwarded onto a tunnel associated with said tunnel ID when said  
subscriber is authorized to access said domain.

20 31. The apparatus of claim 30 wherein said tunneling session comprises an L2TP session.

32. The apparatus of claim 29 wherein said determining further comprises:

means for issuing an authorized domain list request including a virtual circuit  
identifier;

25 means for receiving an authorized domain list that includes authorized domains for  
said identifier;

means for indicating said domain is unauthorized when said domain name is not in  
said domain list;

means for indicating said domain is authorized when said domain name is in said  
5 domain list;

means for issuing a tunnel ID request including said domain name when said domain  
name is authorized; and

means for receiving a tunnel ID.

10 33. The apparatus of claim 32 wherein

said authorized domain list request is serviced by an AAA server; and  
an AAA server services said tunnel ID request.

15 34. The apparatus of claim 32 wherein said virtual circuit identifier comprises a VPI/VCI  
identifier.

35. The apparatus of claim 31 wherein said determining further comprises:

means for issuing a tunnel ID request including said domain name and a virtual  
circuit identifier; and

20 means for receiving a tunnel ID.

36. The apparatus of claim 35 wherein an AAA server services said tunnel ID request.

25 37. The apparatus of claim 35 wherein said virtual circuit identifier comprises a VPI/VCI  
identifier.



38. The apparatus of claim 31 wherein said determining further comprises:

means for performing a table lookup based on a virtual circuit identifier to obtain an

authorized domain list that includes authorized domains for said virtual circuit

5 identifier;

means for indicating said domain is unauthorized when said domain name is not in

said authorized domain list;

means for indicating said domain is authorized when said domain name is in said

authorized domain list; and

10 means for performing a table lookup based on said domain name to obtain a tunnel ID

when said domain name is authorized.

39. The apparatus of claim 38 wherein said virtual circuit identifier comprises a VPI/VCI  
identifier.

15 40. An access server capable of forcing subscribers of a communications system to gain  
access exclusively to a domain network associated with a virtual circuit, said access  
server comprising:

an authorized domain list request generator capable of generating an authorized

20 domain list request including a virtual circuit identifier associated with a virtual

circuit used to accept a PPP session authentication request, said PPP session

authentication request including a domain identifier;

an assessor capable of determining whether said domain identifier is in said domain  
list;

a tunnel ID request generator capable of generating a tunnel ID request including said domain identifier; and  
an authorizer capable of granting users domain access based upon said authorized domain list.

41. The access server of claim 40, further comprising:

a first receiving interface capable of accepting said PPP session authentication request;  
a first forwarding interface capable of sending said authorized domain list request to an AAA server;  
a second receiving interface capable of accepting a requested authorized domain list;  
a second forwarding interface capable of sending said tunnel ID request to an AAA server;  
a third receiving interface capable of accepting a requested tunnel ID; and  
a third forwarding interface capable of forwarding said PPP session on a tunneling session associated with said tunnel ID.

42. The access server of claim 40 wherein said tunneling session comprises an L2TP session.

43. The access server of claim 42 wherein said virtual circuit identifier comprises a Virtual Path Identifier (VPI) / Virtual Channel Identifier (VCI).

44. The access server of claim 43 wherein said first receiving interface comprises at least one access multiplexer, each access multiplexer having a plurality of inputs for receiving a service request, each of said inputs being associated with a particular subscriber virtual circuit.

45. The access server of claim 41 wherein said AAA server and said access server communicate using the Remote Authorization Dial-In User Service (RADIUS) protocol.

46. An access server capable of forcing subscribers of a communications system to gain access exclusively to a domain network associated with a virtual circuit, said access server comprising:  
a tunnel ID request generator capable of generating a tunnel ID request, said tunnel ID request including a virtual circuit identifier associated with a virtual circuit used to accept a PPP authentication request; and  
an authorizer capable of granting users domain access based upon a list of authorized domains for said virtual circuit.

47. The access server of claim 46, further comprising:  
a first receiving interface capable of accepting said PPP session authentication request, said PPP session authentication request including a domain identifier;  
a first forwarding interface capable of sending said tunnel ID request to an AAA server;

a second receiving interface capable of accepting a requested tunnel ID; and  
a second forwarding interface capable of forwarding said PPP session on a tunneling  
session associated with said tunnel ID.

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48. The access server of claim 47 wherein said tunneling session comprises an L2TP  
session.

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49. The access server of claim 48 wherein said virtual circuit identifier comprises a  
Virtual Path Identifier (VPI) / Virtual Channel Identifier (VCI).

50. The access server of claim 46 wherein said first receiving interface comprises at least  
one access multiplexer, each access multiplexer having a plurality of inputs for  
receiving a service request, each of said inputs being associated with a particular  
subscriber virtual circuit.

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51. The access server of claim 47 wherein said AAA server and said access server  
communicate using the Remote Authorization Dial-In User Service (RADIUS)  
protocol.

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52. An access server capable of forcing subscribers of a communications system to gain  
access exclusively to a domain network associated with a virtual circuit, said access  
server comprising:

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a memory device capable of storing a domain list table and a tunnel ID table, said  
domain list table including a plurality of virtual circuit identifiers and associated

domain identifiers, said tunnel ID table including a plurality of domain names  
and associated tunnel IDs;

an authorized domain list determiner capable of determining an authorized domain

5 list based upon said domain list table and a domain identifier within a PPP  
authentication request, said PPP authentication request received on a virtual  
circuit having a virtual circuit identifier;

an assessor capable of determining whether said domain identifier is in said domain  
list;

10 a tunnel ID determiner capable of determining a tunnel ID based upon said tunnel ID  
table and said domain identifier; and

an authorizer capable of granting subscribers domain access based upon said  
authorized domain list.

15 53. The access server of claim 51, further comprising:

a receiving interface capable of accepting said PPP session authentication request;  
and

a forwarding interface capable of forwarding said PPP session on a tunneling session  
associated with said tunnel ID.

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54. The access server of claim 53 wherein said tunneling session comprises an L2TP  
session.

55. The access server of claim 54 wherein said virtual circuit identifier comprises a Virtual Path Identifier (VPI) / Virtual Channel Identifier (VCI).

- 5 56. The access server of claim 52 wherein said first receiving interface comprises at least one access multiplexer, each access multiplexer having a plurality of inputs for receiving a service request, each of said inputs being associated with a particular subscriber virtual circuit.

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